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Looney, R.E.

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MECHANISM OF MEXICAN ECONOMIC GROWTH: THE ROLE OF DETERIORATING SOURCES OF GROWTH IN THE CURRENT ECONOMIC CRISIS

By Robert E. Looney

Until the last decade, Mexico was considered a major success story among the less developed countries that have been attempting to modernize and industrialize since World War II. The results were impressive. By 1980, Mexico(1) was producing more than 10 percent of the Third World's total manufacturing output, and it had become the tenth largest country in the world in terms of gross domestic product originating in manufacturing.(2)

When expressed in dollar value, the output of industry exceeded that of developed countries like the Netherlands, Switzerland, Belgium, Denmark or Norway. In absolute terms, the value of industrial output was about the size of Argentina's or India's, more than five times that of Israel's, and about twice that of South Korea.(3)

These developments may explain in part why the crisis the Mexican economy has been going through since 1982 has taken the majority of Mexican(4) and outside observers by surprise.(5)

The standard interpretation(6) of Mexico's current financial and economic problems is that it is the culmination of developments that began after the peso crisis of 1976. According to this line of reasoning, following the discovery of vast oil resources in 1977, the Mexican government embarked on free-spending policies aimed at rapid economic development, and at accelerating the rise in the overall standard of living:(7)

> . . . year after year, expenditures exceeded revenues, and the government's budget showed a continually larger deficit. The financing requirements of the government's deficit added to the already booming demand for the country's meager supply of domestic capital resources. Interest rates began to rise rapidly. To moderate the increase and thus to keep the expansion going, the Central Bank accelerated its monetization of the government's debt i.e., purchasing government securities issued to finance the debt by newly created money. In addition to

> 'printing press' financing of its deficit, the government turned to foreign sources. A growing portion of the deficit was financed by borrowing abroad and the public foreign debt rose from about $8 billion in 1974 to around $60 billion by 1982.(8)

By the beginning of 1987 the country's external debt was well over $100 billion, with little evidence that the country had any coherent plan for dealing with the situation.(9)

In general the main thrust of the orthodox interpretation of Mexico's current economic crisis is that the country is experiencing a (short run) crisis in liquidity rather than a (longer-run) problem of involvency.(10)

Unfortunately, the liquidity crisis interpretation of recent trends in the Mexican economy has lead to a certain amount of complacency on the part, not only of government officials, but also of influential(11) observers.

While the orthodox view of Mexico's economic problems undoubtedly provides valuable guidance, therefore, in the design of short to medium term stabilization programs, the country's lingering financial crisis and sub-par economic performance suggest that some longer term (insolvency) factors are as least as important if not more important than the shorter run (illiquidity) factors usually stressed. The purpose of this paper is therefore to propose an alternative explanation for the country's current economic woes, an explanation that stresses the longer run trends in declining total factor productivity experienced by the economy since World War II.

Total Factor Productivity

The basis of the calculations of the factors underlying the slow-down in Mexican economic growth is a simplified production function along the lines suggested by Denison(12) in which output is expressed as a function of labor (L), capital (K), land (R), and a total factor productivity term (A), and the form of the production function is of the Cobb-Douglas type; i.e., output is assumed to be a function of technology, capital and labor with the elasticity of substitution between capital and labor assumed to be unity.(13)

The advantage of this formulation is that its logarithmic form permits one to use information on observed growth of labor, capital, and land to derive total factor productivity, rP; i.e.

$$rP = rY - (arL + brK + crR)$$

where rY, rL, rK and rR refer to annual proportionate rates of Gross Domestic Product, labor, capital and land respectively.

The three factor inputs, land, labor and capital are weighted according to the constant returns to scale assumption implicit in the Cobb-Doublas production function; i.e., the coefficients with respect to each input (a, b, and c, respectively) sum to unity, with the coefficient presenting the respective share of that factor in value added. In Mexico's case, the shares of factor incomes during the 1960-80 period were approximately: (14)

1. a = labor share = 0.60
2. b = capital share = 0.35
3. c = land rent share = 0.05

and thus these values are used in the sources of growth computations.

The relatively high capital share of 0.35 in Mexico during this period compared to that in the range of 0.25 to 0.35 usually found in the more advanced countries can be explained in part by the fact that due to the country's stage of industrialization, there were numerous and obvious "gaps" in the capital structure to be filled. To a considerable degree investment has represented efforts to fill in these gaps. In contrast countries with an already extensive capital structure have patterns of investment oriented more towards replacing and duplicating existing capital, hence the generally lower rate of return in these areas.

Secondly, Mexico's recent import substitution policy — the policy of eliminating entirely the importation of certain products to encourage their domestic production — has also created gaps that in turn provided possibilities for profitable investments. The monopolistic position of many of the import substitution plants has often permitted the maintenance of prices at levels sufficient to assume relatively high returns on capital. In the context of the present study, it is this latter explanation of Mexico's relatively high marginal product of capital that is particularly relevant. (15)

In terms of the actual calculations of factor productivity, growth of output is taken from the International Monetary Funds's *International Financial Statistics* and deflated to constant 1960 prices by using the wholesale price index. Growth of the labor force is based on the International Labor Office's figures for five year intervals; intervening years are derived by

extrapolation. The capital stock was calculated beginning with Reynold's(16) estimate for 1959. A hypothetical rate of depreciation (5 percent) was then applied and gross investment for the year (in constant prices) added in order to derive the capital stock (K) at the end of the year (Table 1).

The figures for land are taken from Reynolds and are probably the least reliable. Land *per se*, however, probably has played a relatively minor role in the country's recent economic growth; the margin of error is not critical to the overall results.

Using the assumed factor weights, the relative importance of direct factor inputs, together with the residual (or unexplained productivity) were estimated.

The results (Table 2) confirm the general trends found in earlier studies and indicate that these continued into the early 1980s:

1. Growth in real GDP has gradually decelerated from 8.2 percent per annum in 1960-65 to 6.8, 5.9, and 5.5 percent per annum for the 1965-70, 1970-75, and 1975-80 subperiods, respectively.

2. The rate of capital formation continued to accelerate during the 1960-80 period, from 3.1 percent per annum in the 1960-65 period to 5.9, 6.8 and 7.4 percent per annum for the 1965-70, 1970-75 and 1975-80 subperiods, respectively.

3. Similarly, the contribution of capital to over-all growth has increased during this period as has that of total factor inputs.

4. It follows that pure productivity growth (the unexplained growth factor) has continued its decline observed for earlier periods, falling from 5.3 percent for the 1960-65 period to 2.9, 1.4 and 0.8 percent per annum, respectively, for the 1965-70, 1970-75, and 1975-80 subperiods.

5. As a result of investment expanding at a rate faster than GDP, its share has risen progressively since 1940. Similarly, the internal rate of savings has almost doubled since the 1940s. Still investment opportunities appear to have increasingly outstripped domestic savings capacity, leading to growth of foreign borrowing. External borrowing (imports – exports) has risen sharply as a share of GDP from 0.2 percent in the 1940s, to 1.8 percent and 3.1 percent in the 1960s and 1970s, respectively. As a share of total investment external borrowing rose from under 2 percent in the 1950s to 10 percent in the 1970s. This

TABLE 1
MEXICO: INVESTMENT, CAPITAL, GDP AND CAPITAL OUTPUT RATIOS, 1960-1980

	Gross Investment (Billions of Current Pesos)	Gross Investment(1) (Billions of 1960 Pesos)	Capital Stock (K) (Billions of 1960 Pesos)	Change in Capital Stock (Δ Y)	Gross Domestic Product (Y)	Change in Gross Domestic Product (Δ Y)	Capital Output Ratio (K_{t-1}/Y_c)	Incremental Capital-Output Ratio	
1959	19.6	-	331.1	-	-	-	-	-	-
1960	23.2	23.2	337.8	6.7	150.5	-	2.2	0.9	-
1961	24.1	23.3	344.2	6.4	157.9	7.4	2.1	0.9	3.1
1962	24.8	23.3	350.3	6.1	165.3	7.4	2.1	0.5	3.1
1963	32.6	29.7	362.5	12.2	178.5	13.2	2.0	0.6	1.8
1964	41.0	35.4	379.8	17.3	199.4	20.9	1.8	1.3	1.4
1965	44.2	37.2	398.0	18.2	212.3	12.9	1.8	1.2	2.7
1966	50.2	40.7	418.8	20.8	227.0	14.7	1.8	1.5	2.5
1067	59.6	46.9	444.8	26.0	241.3	14.3	1.7	1.3	2.8
1968	65.7	50.5	473.1	28.3	260.9	19.6	1.7	1.7	2.4
1969	72.8	53.9	503.4	30.3	277.4	16.5	1.7	1.6	3.1
1970	82.3	58.3	536.5	33.1	296.6	19.2	1.7	3.2	2.8
1971	81.6	55.4	565.1	28.6	306.8	10.2	1.7	1.3	5.7
1972	97.8	62.8	599.6	34.5	329.1	22.3	1.7	1.4	2.5
1973	126.4	72.2	641.8	42.2	354.1	25.0	1.7	1.4	2.5
1974	173.6	80.0	689.7	47.9	375.0	20.9	1.7	2.0	3.5
1975*	235.6	91.9	747.1	57.4	393.0	18.0	1.8	2.7	4.4
1976	288.4	92.0	801.7	54.6	401.4	8.4	1.9	6.8	10.9
1977	363.3	82.1	843.7	42.0	414.5	13.0	1.9	4.2	7.1
1978	494.4	96.2	897.7	54.0	444.7	30.2	1.9	1.4	2.7
1979	718.4	118.6	971.4	73.7	480.2	35.5	1.9	1.5	2.7
1980	1032.9	136.9	1059.7	88.3	520.2	40.0	1.9	1.8	3.0

SOURCES: Gross Investment, Gross Domestic Product, computed from data in International Monetary Fund, International Financial Statistics; Capital Stock 1959 figure, Clark Reynolds, A Shift-Share Analysis of Regional and Sectorial Productivity Growth in Contemporary Mexico (Laxenburg, Austria: International Institute for Applied Systems Analysis, 1980.

NOTE: Capital stock 1960-80 computed for each year by using a depreciation rate of 5 percent to previous year's capital stock and adding the current year's gross investment.

TABLE 2

MEXICO: SOURCES OF GROWTH, 1960 - 1980

Year	Average Annual Rate of Growth (%)				Contribution to GDP Growth (%)				
	GDP	Capital	Labor	Land	Capital	Labor	Land	Inputs	Unexplained
960	13.4	2.0	2.6	3.2	0.7	1.6	0.2	2.5	10.9
1961	4.9	1.9	2.6	3.2	0.7	1.6	0.2	2.5	2.4
1962	4.7	1.8	2.6	3.2	0.6	1.6	0.2	2.4	2.3
1963	8.0	3.5	2.6	3.2	1.2	1.6	0.2	3.0	5.0
1964	11.7	4.8	2.6	3.2	1.7	1.6	0.2	3.5	8.2
1965	6.5	4.8	2.6	-0.5	1.7	1.6	-	3.3	3.2
1966	6.9	5.2	3.0	-0.5	1.8	1.8	-	3.6	3.3
1967	6.3	6.2	3.0	-0.5	2.2	1.8	-	4.0	2.3
1968	8.1	6.4	3.0	-0.5	2.2	1.8	-	4.0	4.1
1969	6.3	6.4	3.0	-0.5	2.3	1.8	-	4.1	2.2
1970	6.9	6.6	3.0	2.0	2.3	1.8	0.1	4.1	2.8
1971	3.5	5.3	3.3	2.0	1.9	2.0	0.1	4.0	-0.5
1972	7.3	6.1	3.3	2.0	2.1	2.0	0.1	4.2	3.1
1973	7.6	7.0	3.3	2.0	2.5	2.0	0.1	4.6	3.0
1974	5.9	7.5	3.3	2.0	2.6	2.0	0.1	4.7	1.2
1975	4.1	8.3	3.3	2.0	2.9	2.0	0.1	5.0	-0.9
1976	2.1	7.3	3.3	2.0	2.6	2.0	0.1	4.7	-2.6
1977	3.3	5.2	3.3	2.0	1.8	2.0	0.1	3.9	-0.6
1978	7.3	6.4	3.3	2.0	2.2	2.0	0.1	4.3	3.0
1979	8.0	8.2	3.3	2.0	2.9	2.0	0.1	5.0	3.0
1980	8.3	9.1	3.3	2.0	3.2	2.0	0.1	5.3	3.0
1960-65	8.2	3.1	2.6	2.6	1.1	1.6	0.2	2.9	5.3
1965-70	6.8	5.9	2.9	-0.1	2.1	1.8	-	3.9	2.9
1970-75	5.9	6.8	3.3	2.0	2.4	2.0	0.1	4.5	1.4
1975-80	5.5	7.4	3.3	2.0	2.6	2.0	0.1	4.7	0.8

SOURCE: Computed from data in: GDP, Investment, International Monetary Fund, International Financial Statistics; Labor International Labor Office, Labor Force 1950-200 Volume III, Latin America (Geneva, 1977); Land, Clark Reynold, A Shift-Share Analysis of Regional and Sectorial Productivity Growth in Contemporary Mexico (Laxenburg, Austria) International Institute for Applied Systems Analysis, 1980); Capital, Table

NOTE: Following Reynolds (above reference), the weights used for computing capital's labor's and land's contribution to growth wre 0.35 and 0.05 respectively.

TABLE 3

PROXIMATE SOURCES OF PRODUCTIVITY GROWTH IN THE MEXICAN ECONOMY, 1940-1975

(Average Annual Growth)

	1940-50	1950-60	1960-70	1960-65	1965-70	1970-75
Output						
(1) Gross Domestic Product	5.8	5.9	6.8	6.9	6.7	5.5
Input						
(2) Man-years of Labor	3.5	2.0	2.4	2.4	2.4	2.5
(3) Capital Stock	2.8	5.5	6.0	5.3	6.7	6.7
(4) Hectares of Land in Cultivation	3.6	1.0	2.1	3.2	-0.5	2.0
(5) Rate of Growth attributable to Direct Factor Inputs (2 - 4 above)	3.3	3.2	3.6	3.5	3.8	3.9
(6) Rate of Growth Unexplained by above Inputs	2.5	2.7	3.2	3.4	2.9	1.6

SOURCE: Clark W. Reynolds, A Shift-Share Analysis of Regional and Sectoral Productivity Growth in Contemporary Mexico (Laxenburg, Austria: International Institute for Applied Systems Analysis, 1980), p. 6.

TABLE 4

MEXICO: SOURCES OF GROWTH, 1970 - 1964

Period	Average Annual Growth (%)			Contribution to Growth 9%)		
	GDP	Capital	Labor	Capital	Labor	Productivity
1940-45	9.0	1.7	2.8	0.9	1.4	6.7
1946-53	5.0	4.9	2.6	2.5	1.3	1.2
1955-59	5.7	4.2	3.1	2.1	1.6	2.0
1960-64	6.2	4.2	2.5	2.1	1.3	2.8

SOURCE: Henry J. Bruton, "Productivity Growth in Latin America," American Economic Review (December 1967), pp. 1099-1116.

NOTE: Capital and labor rates of growth are weighted by (0.50) each to derive their contribution to the rate of growth of gross domestic product.

is consistent with the decline in net productivity growth and implies that the domestic surplus available for savings and investment is expanding at a lower rate (thus forcing increased dependence on foreign borrowing and foreign direct investment).

These trends obviously reflect the higher growth rates of labor and capital in recent years. The slow-down in productivity is especially serious since the capacity of the market to transmit productivity gains from leading to lagging sectors depends on net productivity growth. The results also suggest that the Mexican economy may have reached a watershed in the early 1960s such that the previous pattern of development is now giving way to a new set of structural forces which imply slower output growth per unit of input.

Since this process of deceleration has been occurring simultaneously with pressures mounting for: 1) wage increases; 2) greater social outlays; 3) more equitable agrarian policies; and 4) other reform measures, an alleviation of the factors underlying the decline in productivity growth is especially critical. Similarly, the acceleration in demographic growth and urbanization in recent decades makes it imperative that the economy increase its ability to absorb new entrants into the work force.

Reynolds(17) found (Table 3) productivity gains at the national level rising steadily from the 1940s through the mid-1950s, only to level off in the mid-1950s, finally reaching a high of 3.4 perccent per annum in the period 1960-65, falling to 2.9 percent per annum in the second half of the decade, and further declining to 1.6 percent per annum in the 1970-75 period.

The study by Henry Bruton(18) indicates (Table 4) that productivity growth not caused by increases in the productive factors of labor and capital amounted to 6.75 percent a year in 1940-45, 1.25 percent in 1946-54, 2.05 percent in 1955 percent in the 1955-59, and 2.85 percent for 1960-64. According to Bruton, all of Latin America including Mexico to a lesser extent, has experienced a reduction in the rate of production increase not attributable to the increase in capital and labor productive factors as a result of the inefficiency of the process of "forced" industrialization initiated by these countries.

In contrast during this period both Europe and the United States, experienced a very high percentage of production incre-

ment produced by increases in productive factors. In Latin America this percentage was very small. In other words, that growth attributable to technological or radical change in limited and has been declining, since the Latin American countries through their process of import substitution industrialization, have been unable to develop the economies of scale and other types that could be expected under other conditions of the growth process. It should be noted that Bruton assumes a functional distribution of production amounting to 50 percent for the capital factor and 50 percent for labor. He omits changes in the area cultivated as a productive factor.

In an earlier work, Clark Reynolds(19) makes the same calculations for 1940-50 and 1950-60. For the first period he estimates an increment of 3.3 percent a year in the product not attributable to increases in capital and labor factors. For 1950-60, growth not resulting from these productive factors drops to 2.5 percent of the product.

Although Reynolds differs somewhat from Bruton methodologically, his adherence to Bruton's hypothesis is implicit in his work. Furthermore, Reynolds estimates "social accounting equations" of the Denison type for farm and industrial sectors and concludes that in the agricultural sector the percentage of product growth rate not accounted for by increase in productive factors is comparatively much higher than in the industrial sector. Accordingly, during 1940-50, only 0.2 percent of sectoral growth in the industrial sector can be attributed to factors other than labor and capital, while for 1950-60 only 0.7 percent is attributable to these causes. This compares with a growth for the same periods of about 1.2 and 1.9 percent in agriculture.

In other words the calculations of Professor Reynolds imply that production factors are more profitable or generate a relatively higher percentage of technological or residual change in the farm sector than in the manufacturing sector. Seen from one standpoint, Bruton and Reynolds coincide in explaining product growth in Mexico along similar lines. They both believe that the productivity of productive factors is much higher in the farm sector than in industry.

The third study, that undertaken by Marcello Selowsky,(20) includes adjustment of the labor force for improvement of education. He indicates that improvement in education tends to increase steadily its weight as a factor in economic growth. In

1945-50, improvement in education, accounted for only 0.1 percent of the annual growth rate. Subsequently in 1950-55, it accounted for 0.21 percent a year, in 1955-59 for 0.20 percent, and in 1960-64 for 0.51 percent. In other words improvement in education tended to become increasingly important as a component of economic growth.

It is also of interest to note that once the necessary adjustments have been made, the product remainder tends to diminish. Accordingly, the 1940-45 remainder accounted for 5.92 percent out of a growth rate of 7.37 percent. In 1945-50 it represented 2.18 percent out of 5.84 percent, and finally in 1960-64 out of a rate of 6.22 percent for the gross domestic product, the remainder came to only 1.47. This tends to confirm the explicit Bruton and implicit Reynolds hypothesis and the one developed here, that basic inputs are being used in an increasingly less profitable manner as a result of their diversion from agriculture to industry.

This interpretation is consistent with the country's agricultural policy of attempting to turn the terms of trade against agriculture in order to maintain low food prices in urban areas. The economic outcomes of these policies for the agricultural sector have resulted in: (21)

1. State controls on the prices of food staples, like maize, beans, and (to a lesser extent) wheat, have made them unattractive to commercial farmers thus depressing the production of these crops in the capitalist sector;
2. These same disincentives also affect production in the peasant sector; small farmers attempt to produce enough of these crops for their own needs but have little interest in producing substantial surplus for sale. Small farmers increasingly become marginalized.
3. Private investment in the agricultural sector has thus tended to be in those 'luxury' commodities that will bring high prices in the international and national markets, thus earning substantial proficts for their producers.
4. Public investment has also been biased toward producing infrastructure and subsidies for the larger producers who are thought to be most capable of providing surpluses of agricultural staples and producing export commodities.

The net result has been an increasing inability on the part of the agricultural sector to productively employ the growing labor force.

Along these lines, several possible explanations are consistent with the results obtained in the current study. Clearly, the acceleration in the size of the labor force may have begun to place a significant drag on productivity growth. This could have occurred as early as the mid-1960s as the supply of available workers began to outstrip demand growth, thus causing labor productivity growth to fall. Coale(22) has hypothesized that the acceleration in population growth beginning around 1940 eventually led to a lower rate of productivity growth and social progress than would have been achieved under more moderate demographic conditions. Through detailed shift share analysis Reynolds has provided additional evidence to support this view.(23)

Another hypothesis, while acknowledging the influence of rapid growth on productivity, stresses the role of government policy in contributing to the decline in productivity. The development policies which created the profitable opportunities for investment (especially in the years after 1955) also created conditions that:

5. made it extremely difficult for technological reasons to achieve as high a rate of productive increase; and
6. created an economic environment in which Mexican entrepreneurs had little incentive to search for productivity increasing improvements.

More specifically, it is argued that during the 1940-45 period (the war years) both technological and incentive factors worked in favor of a relatively high growth in productivity. In particular World War II provided projects without distortion (due to unavailability of consumer goods imports from the advanced countries), while the import substitution approach to development has provided protection, it has also imposed severe distortions, and it is these distortions that create the two effects outlined above.(24)

Of particular relevance is the fact noted above that in the 1940-45 period the growth of capital was much lower than in later periods (due largely to the curtailment of imported capital goods). During the 1940-45 period, there existed a strong and obvious demand in both the internal markets and for exports. Consequently, there was simultaneously great incentive for firms to increase output, but an inability on their part to obtain new plant equipment, and spare parts and replacements.

The flow of many raw material imports was also irregular and unpredictable during the 1940-45 period. With foreign supplies of capital equipment difficult to obtain, firms (to take advantage of favorable markets) were forced to find ways to use their existing capital stock with increasing effectiveness. Improvisation and adaptation of existing equipment were common, and one can find many examples in Mexican industry during this period of indigenously devised machines producing various items for household and business use.

World War II then not only provided "protection" from foreign competition, but more importantly helped to create an environment within which Mexican entrepreneurs had incentives to utilize resources at hand with increasing effectiveness. The innovative activity observed in Mexican industry during this period included not only changes in technique to fit the domestic supply of inputs complementary to capital (labor of various skills and quality, raw material imports, and managerial ability) but also the adaptation to techniques to fit the country's market size and of products to fit the nation's unique profile of demand.

Although the growth of the labor supply was not thwarted the way capital inputs were, the wartime isolation had some effect on labor's use.

1. One of the consequences of the efforts to use physical capital more effectively was the adaptation of local tools and equipment to fit the quality of the available labor.
2. Thus Mexico's capital stock became increasingly appropriate to the country's relative factor endowments (thereby raising its productivity).
3. Strong and obvious demand in a situation where availability of new imported capital was recognized to be almost nil forced entrepreneurs to strive for a relatively high degree of productivity.

The wartime experience is most clearly contrasted with the post-1955 period. In this latter period, a large segment of the domestic economy was again isolated from foreign competition, but this time by high tariffs and other forms of import impediments, particularly a stringent system of import licensing.

As the war has created profitable opportunities for increased output of a wide range of manufactured goods, so also the government's strategy of import substitution created a much

different environment for industrialization than periods of relatively free trade (1945-55) or the war years (1940-45). The response to the opportunities that produced high rates of productivity increase during the war years seems to be absent in later years. In comparing the later periods with the war period, three characteristics seem to be especially relevant.

1. The most obvious difference has to do with the supply conditions of imported capital goods. As noted, capital goods imports were virtually unavailable during the 1940-45 period. After 1955, the almost universal and continuous overvaluation of the peso made capital imports cheap relative to domestic inputs. Mexican entrepreneurs not only knew that foreign-made capital was available, but had a major incentive to use it intensively in their production. Based on a number of studies of developed and developing countries, there is no real firm evidence that capital formation tends to incorporate the sources of productivity growth. On the labor side, a variety of social welfare policies in the 1960s, and especially 1970s and early 1980s, added to the cost of employing labor. (25)

There is no doubt that prevailing market prices for capital and labor reflected the real factor supply situation much more accurately in the 1940-45 period than they did in the later periods. In a very general sense, it seems correct to say than the capital equipment imported from and designed for capital rich labor scarce countries was more nearly appropriate (for the individual producer) in its unmodified state, than was the case in the war years.

In this sense, Mexican entrepreneurs had less incentive to modify or adapt (and thereby raise the productivity of) their imported capital than they had in the earlier period. Indeed their incentives worked in the opposite direction: they were encouraged to meet any demands for increased output by acquiring more capital from abroad. It is important to emphasize that the misleading factor prices arose largely from specific policy measures, not from some endemic characteristic of the economy. Similary note should be taken of the fact that "entrepreneural response" did not change; i.e., entrepreneurs reacted to market signals from both periods with considerable rationality.

2. Another difference between the 1940-45 and later (especially the post-1965) period has to do with the composition of output. Although industrialization was underway in Mexico

before 1940, it was not until the 1950s that an explicit import substitution policy of industrialization was effective. In the present context the most relevant characteristic of this policy is the haphazard and ad hoc manner in which trade barriers were applied. There is no evidence of a careful review leading to the protection of individual industries or activities on the basis of expected productivity growth or infant industry considerations. Rather import limitations were initiated largely either:

1. to mediate balance of payments difficulties; or
2. in response to pressure from specific interests wishing to expand into new activities.

The result of such a policy has been not only a reduction in current income in accordance with the conventional free trade model (perhaps directly accounting for the continuous deceleration in overall growth throughout the 1960 period) but more importantly the creation of an industrial structure that is quite incapable of creating a significant number of new jobs due to the capital intensive nature of capital goods import. Furthermore, as profit rates on invested capital (even with considerable underutilization) remained high, gaps offered opportunities for further investment. As foreign loans have become easily obtainable and are usually taken for increasing capacity rather than for utilizing existing capacity, the rate of growth of capital has produced rising prices rather than rising productivity.

In this regard several observers see some hope in the so-called "new technologies."(26) For example Bueno(27) notes that:

> Since Mexico has reached a certain level of technological development, its policy should be less concerned with the selection and negotiation of technology transfer. Instead the country should focus on the questions of adaptation, absorption and diffusion of technologies imported from abroad. As in the case of the import substitution process, the 'simple' stage of technology transfer is over and the country is entering into a new and more complex stage.

Clearly the results above indicate that had this strategy been adopted beginning in the early 1970s the severity of the current economic crisis could have been significantly lessened.

Conclusion

In sum, the observed changes in the rate of growth of pro-

ductivity in Mexico have shown a continuous deceleration due to:

1. a growing inappropriateness of the input mix of production caused in large part to the continued undervaluation of foreign exchange in relation to interest and wage rates;
2. a growing inappropriateness of the composition of output in the sense that production was not based on cost or potential cost considerations, but rather evolved in response to the incentives generated by government policies;
3. declining competition; and
4. rapid increases in the number of workers entering the labor force.

The net result of these longer run trends has been the build up of a series of pressures . During the1960s the country was still able to sustain a high growth rate and a considerable degree of internal and external stability. In the 1970s and 1980s, however, the rate of growth fluctuated greatly and has decelerated considerably over this period. Clearly the decline in total factor productivity has made it increasingly difficult for the country to achieve a suitable equation between growth, employment and the balance of payments. Until Mexico is able to revive the sources of growth responsible for expansion in the 1950s and 1960s, it will be unable to achieve the rate of economic expansion necessary to enable it to deal with its many social and political problems.

FOOTNOTES

(1) For an excellent survey of recent economic trends Cf. Kent Gilbreath "A Businessman's Guide to the Mexican Economy," *Columbia Journal of World Business* (Summer 1986), pp. 3-14.

(2) Kwan S. Kim "Industrial Development in Mexico: Problems, Policy Issues, and Perspectives," In Kwan S. Kim and David F. Ruccio, eds., *Debt and Development in Latin America* (Notre Dame, Indiana: University of Notre Dame Press, 1985), pp. 205-226.

(3) James Street, "Mexico's Development Crisis," *Current History* (March 1987), p. 101.

(4) Julio Lopez "The Mexican Economy: Present Situation, Perspectives and Alternatives" *World Development* (May 1983), p. 455.

(5) For an excellent survey of views on the economy see Wayne Cornelius, "The Political Economy of Mexico Under De la Madrid: Austerity, Routinized Crisis, and Nascent Recovery," *Mexican Studies* (Winter 1985), pp. 83-124.

(6) Federal Reserve Bank of Chicago, *International Letter* (July 1985), number 548. See also the discussion in Chandra Hardy, "Mexico's Development Strategy

for the 1980s," *World Development* (June 1982), p. 510; James Street, "Can Mexico Break the Vicious Circle of 'Stop Go' Policy? An Institutional Overview," *Journal of Economic Issues* (June 1986), pp. 601-611, and in particular Bela Balassa, Gerardo Bueno, Pedro-Pablo Kuczynski and Mario Henrique Simonsen, eds., *Toward Renewed Economic Growth in Latin America* (Washington: International Institute for International Economics, 1986).

(7) Ibid.

(8) For an excellent chronology of the increase in Mexican external debt Cf. Henry C. Schmidt, "The Mexican Foreign Debt and the Sexennial Transition from Lopez Portillo to De la Madrid." *Mexican Studies* (Summer 1985), pp. 227-254.

(9) Leopoldo Solis, Some Thoughts on Mexico's Foreign Indebtedness," *World Economy* (March 1986), pp. 65-77.

(10) Cf. William Cline, "Mexico's Crisis the World's Peril," *Foreign Policy* (1982); the implications of this approach are examined in Robert E. Looney and P.C. Frederiksen "The Feasibility of Alternative IMF-Type Stabilization Programs in Mexico, 1983-87" *Journal of Policy Modeling* (1983), pp. 461-70.

(11) Cf. Carl Migdail, Jorge Hernandez Campos, Enrique Krauze and Josue Sanez, "Mexico is Going to Make It," *The Washington Quarterly* (Winter 1986), pp. 171-186.

(12) E. Denison, "How to Raise the High Employment Growth Rate by One Percentage Point," *American Economic Review* (May 1962). Several recent attempts at applying this technique to a somewhat analogous problem, the apparent slowdown and stagnation of the Soviet economy are given in Gregory Grossman and Ronald Soolberg, in The Soviet Union's Hard-Currency Balance of Payments and Credit Worthiness in 1985 (Santa Monica: The Rand Corporation, 1983).

(13) Cf. R.R. Nelson, "Aggregate Production Functions," *American Economic Review* (September 1964), pp. 575-606 for a description of the properties of the Cobb-Douglas production function.

(14) Following Clark Reynolds, *A Shift-Share Analysis of Regional and Sectoral Productivity Growth in Contemporary Mexico* (Laxenburg, Austria: International Institute for Applied Systrms Analysis, 1980), p. 4.

(15) Henry Bruton, "Productivity Growth in Latin America," *American Economic Review* (December 1967), p. 1105.

(16) Clark Reynolds, *A Shift-Share Analysis*, op. cit., p. 5.

(17) Clark Reynolds, op. cit., p. 6.

(18) Bruton op. cit.

(19) Clark Reynolds, *The Mexican Economy* (New Haven: Yale University Press, 1970); see also Clark Reynolds, "Growth, Distribution, and Structural Change in Mexico: Recent Trends and Future Prospects," in L.E. Kaslow, ed., *The Future of Mexico* (Tempe, Arizona: Arizona State University Press, 1977); and Clark Reynolds, "Why Mexico's 'Stabilizing Development' was Actually Destabilizing (With Some Implications for the Future)", *World Development* (Jine 1978).

(20) Marcelo Selowky, Education and Economic Growth: Some International Comparisons". Cited in Organization of American States, *Domestic Efforts and the Needs for External Financing for the Development of Mexico* OEA 1 Ser-H/XIV, CIAP/562, 28 August 1972, p. 85.

(21) Billie R. DeWalt, "Mexico's Second Green Revolution: Food or Feed," *Mexican Studies* (Winter 1985), p. 50.

(22) Ansley Coale, "Population Growth and Economic Development: The Case for Mexico," *Foreign Affairs* (1978), pp. 415-23. See also Francisco Abla and Joseph Potter, "Population and Development in Mexico Since 1940: An Interpretation," *Population and Development Review* (March 1986), pp. 47-75.

(23) C. Reynolds, *A Shift Share Analysis,* op. cit.

(24) Bela Balassa, "Trade Policy in Mexico," *World Development* (1983), pp. 795-811.

(25) These programs are excellently documented in Peter Ward, *Welfare Politics in Mexico: Papering Over the Cracks* (Boston: Allen and Unwin, 1986), especially Chapter 7.

(26) Cf. Gerardo Bueno, Alternative Forms, Fashions and Politics for Technology Transfer: A Mexican Perspective," *Mexican Studies* (Summer 1986), pp. 235-252.

(27) Ibid., p. 235.